UMO 1512.2 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Henry W. White et al.

Serial No.: Not yet assigned

Filed: Herewith

For PROCESS FOR PREPARING P-N JUNCTIONS HAVING A P-TYPE ZnO FILM

July 8, 2003

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS, SIR/MADAM:

INFORMATION DISCLOSURE STATEMENT

In accordance with 37 C.F.R. 1.97 and 1.98 and MPEP 609, and in compliance with the duty of disclosure set forth in 37 C.F.R. 1.56, applicants submit the references listed on the attached PTO/SB/08A for consideration by the Patent and Trademark Office in the above-entitled application and to be made of record therein.

The references listed on the attached PTO-1449 were previously cited by or submitted to the Office in parent application Serial No. 10/002,790 and, therefore, in accordance with MPEP 609, are not being provided at this time.

Respectfully submitted,

Those F. Malay

Thomas F. Maloney, Reg. No. 50,156 SENNIGER, POWERS, LEAVITT & ROEDEL One Metropolitan Square, 16th Floor St. Louis, Missouri 63102

(314) 231-5400

TFM/kll

Express Mail Label No. EV 271811356 US

| PTO/SB/ | /08A | <u></u> | · | Complete if Known | | |
|-----------------------------------|-----------|---------|--------|----------------------|------------------|--|
| IN | FORMATION | DISC | LOSURE | Application Number | Not Yet Assigned | |
| STATEMENT BY APPLICANT | | | | Filing Date | Herewith | |
| (use as many sheets as necessary) | | | | First Named Inventor | Henry W. White | |
| Sheet | _ 1 | of | 3 | Attorney Docket No. | UMO 1512.2 | |

| | | | U.S | . PATENT | DOCUMENTS | | |
|-----------------------|--------------------------|------------------------|--------------------|--------------------------------------------|----------------------------------------------------|--------------------------------------------------------|----------------|
| | | | U.S. Patent Docum | ent . | | Date of Publication of Cited Document MM-DD-YYYY | |
| Examiner Initials* | Cite No. ¹ | | Number | Kind Code ² (if known) | Name of Patentee or Applicant of Cited Document | | |
| | 1 | 3,713,8 | 22 | | Kiess | 01-30-1973 | |
| | 2 | 3,728,7 | 84 | | Schmidt | 04-24-1973 | |
| | 3 | 3,728,785 3,801,384 | | | Schmidt | 04-24-1973 04-02-1974 | |
| | 4 | | | | Schmidt | | |
| 5 | | 4,626,3 | 22 | | Switzer | 12-02-1986 | |
| | 6 5,141,564 | | | Chen et al. | 08-25-1992 | | |
| | 7 | 5,274,251 | | | Ota et al. | 12-28-1993 | |
| | 8 | 5,248,631 | | | Park et al. | 09-28-1993 | |
| | 9 | 5,574,296 | | | Park et al. | 11-12-1996 | |
| | 10 | 5,620,5 | 57 | | Manabe et al. | 04-15-1997 | |
| | 11 | 5,679,9 | 65 | | Schetzina | 10-21-1997 | |
| | 12 | 5,689,123 | | | Major et al. | 11-18-1997 | |
| | 13 | 5,846,8 | 44 | | Akasaki et al. 12-08-1998 | | |
| | | | FOREI | GN PATE | ENT DOCUMENTS | | |
| | | F | oreign Patent Docu | ment | | | |
| Examiner Initials* | Cite No.1 | Office | Number⁴ | Kind Code ² (if known) | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document MM-DD-YYYY | T ⁶ |

| Examiner | Date | |
|-----------|------------|--|
| Signature | Considered | |

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231.

¹Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

| 08A | | | Complete if Known | | |
|-----------------------------------|-------------------------|--------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--|
| FÖRMATION | I DISC | LOSURE | Application Number | Not Yet Assigned | |
| FATEMENT I | BY AP | PLICANT | Filing Date | Herewith | |
| (use as many sheets as necessary) | | | First Named Inventor | Henry W. White | |
| 2 | of | 3 | Attorney Docket No. | UMO 1512.2 | |
| | FORMATION FATEMENT I | FORMATION DISC FATEMENT BY API as many sheets as | FORMATION DISCLOSURE TATEMENT BY APPLICANT as many sheets as necessary) | FORMATION DISCLOSURE FATEMENT BY APPLICANT as many sheets as necessary) Application Number Filing Date First Named Inventor | |

| | 14 | EPO | EP 0 863 555 | A2 | Masashi et al. | 09-09-1998 | | | | |
|-----------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------|------------------------------------|---|--|--|--|
| | 15 | PCT | WO 00/08691 | | White et al. | 02-17-2000 | | | | |
| | | OTH | IER ART - NON | PATEN | T LITERATURE DOCU | MENTS | ř | | | |
| Examiner Initials* | Cite No.1 | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published. | | | | | | | | |
| | 16 | | BAGNALL et al., Optically pumped lasing of ZnO at room temperature, <i>Appl. Phys. Lett.</i> , April 1997, pp. 2230-32, Vol. 70, No. 17 | | | | | | | |
| | 17 | CRACI 1995, p | | nO thin film | ns on GaAs by pulsed laser dep | osition, <i>Thin Solid Films</i> , | | | | |
| | 18 | | GUNSHOR et al., Blue-green laser-diode technology moves ahead, Laser Focus World, March 1995, pp. 97-100 | | | | | | | |
| | 19 | HIRAMATSU et al., Transparent conducting ZnO thin films prepared by XeCl excimer laser ablation, J. Vac. Sci. Technol., Mar/Apr. 1998, pp. 669-73, Vol. 16, No. 2 | | | | | | | | |
| | 20 | MINEGISHI et al., Growth of p-type Zinc Oxide Films by Chemical Vapor Deposition", J. Appl. Phys., 1997, pp. 1453-55, Vol. 36, Pt. 2, No. 11A | | | | | | | | |
| ı | 21 | JOSEPH et al., p-Type Electrical Conduction in ZnO Thin Films by Ga and N Codoping, <i>Jpn. J. Appl. Phys.</i> , November, 1999, pp. L1205-07, Vol. 38, Part 2, No. 11A, Japanese Journal of Applied Sciences | | | | | | | | |
| | 22 | MOHAI 22-28 | MMAD et al., Reactive | Molecular | -Beam Epitaxy for Wurzite GaN | , MRS Bulletin, Feb. 1997, pp. | | | | |
| | 23 | NAKAMURA, Blue-Green Light Emitting Diodes and Violet Laser Diodes, MRS Bulletin, Feb. 1997, pp. 29-35 | | | | | | | | |
| | 24 | OHTON 2466-6 | OHTOMO et al., Mg _x Zn _{t-x} as a II-VI widegap semiconductor alloy, <i>Appl. Phy. Lett.</i> , May 1998, pp. 2466-68, Vol. 72, No. 19 | | | | | | | |
| | 25 | PEART 17-21 | ON et al., GaN and R | elated Mat | erials for Device Applications, & | MRS Bulletin, Feb. 1997, pp. | | | | |
| | 26 | PONCE | E, Defects and Interfac | ces in GaN | Epitaxy, MRS Bulletin, Feb. 19 | 97, pp. 51-57 | | | | |

| | | |
|-----------|------------|--|
| Examiner | Date | |
| Signature | Considered | |

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231.

¹Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁵Applicant is to place a check mark here if English language Translation is attached.

| PTO/SB | /08A | | | Complete if Known | | |
|--------|---------------|--------|------------|----------------------|------------------|--|
| l IN | IFORMATION | DISC | LOSURE | Application Number | Not Yet Assigned | |
| s | TATEMENT E | BY AP | PLICANT | Filing Date | Herewith | |
| (use | e as many she | ets as | necessary) | First Named Inventor | Henry W. White | |
| Sheet | 3 | of | 3 | Attorney Docket No. | UMO 1512.2 | |

| 27 | REYNOLDS et al., Similarities In The Bandedge And Deep-Centre Photoluminescence Mechanisms of ZnO and GaN, Solid State Comm., 1997, pp. 643-46, Vol. 101, No. 9 |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | SHUR et al., GaN/AlGaN Heterostructure Devices: Photodetectors and Field-Effect Transistors, MRS Bulletin, Feb. 1997, pp. 44-50 |
| 29 | ZOLPER et al., Implantation and Dry Etching of Group-III-Nitride Semiconductors, MRS Bulletin. Feb. 1997, pp. 36-43 |
| 30 | International Search Report, PCT/US 99/17486 |
| 31 | International Search Report, PCT/US00/41952 |

| | <u> </u> | | |
|-----------|----------|------------|----------|
| Examiner | | Date | • |
| Signature | | Considered | |
| Signature | | Considered | <u> </u> |

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, D.C. 20231.

^{&#}x27;Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For ¹Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.